CLAIMS

1. A composition capable of phase separation which comprises an epoxy resin and an impact modifier comprising at least one dimer fatty acid and/or dimer fatty diol.

2. A cured epoxy resin composition comprising phase separated impact modifier comprising at least one dimer fatty acid and/or dimer fatty diol.

3. A composition according to either one of claims 1 and 2 wherein the impact modifier comprises polyester.

4. A composition according to claim 3 wherein the polyester is formed from dimer fatty acids to non-dimer fatty acids at a ratio in the range from 30 to 70%:30 to 70% by weight of the total dicarboxylic acids.

5. A composition according to either one of claims 3 and 4 wherein the polyester is formed from dimer fatty acid, adipic acid, and at least one diol having a molecular weight in the range from 50 to 650.

6. A composition according to any one of the preceding claims wherein the impact modifier comprises polyamide.

7. A composition according to any one of the preceding claims wherein the impact modifier comprises in the range from 15 to 50% by weight of dimer fatty acid and/or dimer fatty diol.

8. A composition according to any one of the preceding claims wherein the weight ratio of epoxy resin:impact modifier is in the range from 1.5 to 10:1.

9. A composition according to any one of the preceding claims comprising in the range from 10 to 50% by weight of impact modifier.

10. A composition according to any one of the preceding claims comprising in the range from 4 to 20% by weight of dimer fatty acid and/or dimer fatty diol.

11. A composition according to any one of the preceding claims wherein the impact modifier is reacted with an epoxy resin to form a prepolymer, prior to formation of the composition.

12. A composition according to claim 11 wherein the prepolymer comprises in the range from 20 to 60% by weight of impact modifier.

13. A composition according to any one of claims 2 to 12 wherein the impact modifier is in the form of particles in an epoxy resin matrix.

14. A composition according to claim 13 wherein the impact modifier particles have a mean particle diameter in the range from 0.4 to 7 μm.

15. A composition according to either one of claims 13 and 14 wherein the impact modifier particles have a mean aspect ratio in the range from 0.6 to 1.4:1.

16. A composition according to any one of claims 13 to 15 wherein less than 25% by number of impact modifier particles have a particle diameter of less than 0.5 μm.

17. A composition according to any one of claims 13 to 16 wherein less than 20% by number of impact modifier particles have a particle diameter of greater than 5 μm.

18. A composition according to any one of claims 2 to 17 wherein the Interfacial Work of Adhesion, Ga is greater than 70 Jm^{-2}.

19. A composition according to any one of claims 2 to 18 wherein the Essential Work of Fracture is in the range from 12 to 18 kJm^{-2}.

20. A prepolymer comprising in the range from 40 to 80% by weight of epoxy resin, and 20 to 60% by weight of impact modifier, wherein the impact modifier comprises in the range from 15 to 50% by weight of at least one dimer fatty acid and/or dimer fatty diol.

21. A cured epoxy resin composition comprising impact modifier particles having an aspect ratio in the range from 0.7 to 1.3:1, and a mean particle diameter in the range from 0.8 to 5 μm.

22. A composition according to claim 21 wherein at least 60% by number of the impact modifier particles have a particle diameter in the range from 0.8 to 5 μm.

23. A composition according to either one of claims 21 and 22 wherein less than 25% by number of impact modifier particles have a particle diameter of less than 0.5 μm.

24. A composition according to any one of claims 21 to 23 wherein less than 20% by number of impact modifier particles have a particle diameter of greater than 5 μm.

25. The use of a composition capable of phase separation, comprising an epoxy resin and an impact modifier comprising at least one dimer fatty acid and/or dimer fatty diol as an adhesive.

26. An electronic assembly adhesive capable of phase separation comprising an epoxy resin and an impact modifier comprising at least one dimer fatty acid and/or dimer fatty diol.

27. A circuit board comprising a chip or die bonded by an epoxy resin adhesive comprising phase separated impact modifier comprising at least one dimer fatty acid and/or dimer fatty diol.

28. A method of forming a composition which is capable of phase separation comprising (i) reacting an impact modifier comprising at least one dimer fatty acid and/or dimer fatty diol with a first epoxy resin to form a prepolymer, and (ii) mixing the prepolymer with a second epoxy resin, and optionally (iii) curing the composition.

29. A method according to claim 28 wherein the molecular weight of the first epoxy resin is less than the molecular weight of the second epoxy resin.